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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,150	12/10/2003	Chih Yuan Huang	11064-US-PA	4810
31561	7590	11/13/2009		
JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE			EXAMINER	
7 FLOOR-1, NO. 100			MARKOFF, ALEXANDER	
ROOSEVELT ROAD, SECTION 2				
TAIPEI, 100			ART UNIT	PAPER NUMBER
TAIWAN			1792	
			NOTIFICATION DATE	DELIVERY MODE
			11/13/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USA@JCIPGROUP.COM.TW  
Belinda@JCIPGROUP.COM.TW

### Office Action Summary

**Application No.**

10/731,150

**Applicant(s)**

HUANG ET AL.

**Examiner**

Alexander Markoff

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-6, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed 6/25/09 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The applicants amended the specification to delete the recitation of the used solutions, such introduces new matter to the disclosure.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1, 3-6 and 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 2002/0020432) in view of Verhaverbeke et al (US 2003/0045098), Verhaverbeke et al (US Patent NO 6,491,763) and Saeed et al (US Patent No 5,516,730).

Chang teaches cleaning wafers with gate structures by application of the ammonium hydroxide – hydrogen peroxide – water solution as claimed to prevent corrosion of the structure caused by conventional RCA cleaning. See entire document, especially Abstract, parts [0009-0013],

Chang does not specifically teach the steps of cleaning with ozonized water prior and after the disclosed cleaning.

However, Chang cites Saeed et al ( US Patent No 5,516,730, which is referenced by Chang and PTO-892 as Pirooz et al) to show that that such step

was conventional in the cleaning of the gate oxide structures with RCA chemicals. See at least parts [0005-0006].

Saeed et al teach that such treatment is needed to produce hydrophilic surface.

See at least column 2, line 63 – column 3, line 22.

It would have been obvious to an ordinary artisan at the time the invention was made to include the ozonated water step in the method of Chang after the recited cleaning step with reasonable expectation of success because Chang teaches it as known and Saeed et al teach that such step is needed to produce a hydrophilic surface.

It would have also been obvious to an ordinary artisan at the time the invention was made to conduct such step instead of the water rinsing to reduce amount of chemicals used because Saeed et al teach that the wafers may be immediately dried after ozonated water rinsing.

The use of ozonated water to remove organic contamination prior to the RCA cleaning was known in the art as evidenced by Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763). See at least Background of the Invention in US Patent NO 6,491,763 and part [0059] in US 2003/0045098.

It would have been obvious to an ordinary artisan at the time the invention was made to include an ozonated water cleaning step prior to the modified RCA cleaning disclosed by Chang with reasonable expectation of success in order to

enhance the process because Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) teaches such as known to remove organic contamination.

With respect to claims 12 and 13:

Saeed et al teach concentration as recited by claim 12 (at least column 3, lines 8-12). The disclosed range also includes the concentration recited by claim 13.

As for claim 13:

It would have been obvious to an ordinary artisan to find an optimum concentration of the active component by routine experimentation inside of the disclosed range in order to enhance the process.

Further, Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) do not disclose specifically claimed concentrations of ozone, but it would have been obvious to an ordinary artisan to find an optimum concentration of the active component by routine experimentation in order to enhance the process.

Moreover, as it has been indicated above the claimed concentrations are known and used in the art of semiconductor cleaning, as evidenced by Saeed et al.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1, 3-6, 12 and 13 have been considered but are moot in view of the new ground(s) of rejection.

The applicants amended the claims and allege that the previously applied rejections are not proper with respect to the amended claims.

The amended claims are addressed above.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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